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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,079	08/28/2001	Kun-Yung K. Chang	R1-P101	5752
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DENIRO/RAMBUS			CHANG, EDITH M	
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SAN FRANCISCO, CA 94105			PAPER NUMBER	

2637

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/941,079	Applicant(s) CHANG ET AL.	
	Examiner Edith M. Chang	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43, 45 and 47-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-34 is/are allowed.
- 6) ☒ Claim(s) 1-18, 35, 36, 38, 40-43, 45 and 47-58 is/are rejected.
- 7) ☒ Claim(s) 37, 39 and 59 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 4, 47-51 and 59 are objected to because of the following informalities:

Claim 4, line 3: "signal includes" is suggested changing to "circuit includes".

Claim 45, line 6: "phase control circuit" is suggested changing to "a phase control circuit".

Claims 47 & 59, line 2: "the method comprising" is suggested changing to "the method comprising steps of".

Claims 48-51 are dependent on the objected claim 47.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 45 and 47-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 45, line 4: "a first command" does not clearly indicate that the "a first command" is one of commands or is just a command no other commands (second, third, etc.), and "a first mode" is not clearly indicate that "a first mode" is one of multiple modes or mere a mode; line 8: "a first clock signal" does not clearly indicate that "a first clock signal" is one of multiple clock signals or solely one clock signal.

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Claim 47, line 3: “a first mode” is not clearly indicate that “a first mode” is one of multiple modes or mere a mode; line 7: “a first clock signal” does not clearly indicate that “a first clock signal” is one of multiple clock signals or sole one clock signal.

Claims 48-51 are dependent on the rejected claim 47.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-18, 35-36, 38, and 40-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Kyles et al. (US 6,008,680).

Regarding **claims 1 & 11**, in FIG.7, Kyles et al. teaches a circuit of receiving clocking signal and its method, the circuit comprises a phase detect 520 (as the control circuit) receiving a RECEIVE DATA (as an input signal) to generate a SLOWER (as the first control signal) based on the phase difference of the RECEIVE DATA and the RECOVERED CLOCK (column 6 lines 23-32); the MUX 516, the MUX 518 and the shift register 730 (as the select circuit, column 7 lines 47-55) receiving the SLOWER signal and a FASTER signal (as the second control signal) to select the SLOWER or the FAST and to output the $TUNE_0 - TUNE_{N-1}$ signal (the selected control signal) to the continuously adjustable delay circuit 800 to adjust the phase of the clock (column 6 lines 44-50, wherein the circuit 300 in FIG.3 is the circuit 800 in FIG.7).

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Regarding **claims 2 & 12**, in FIG.9A, Kyles et al. teaches the flip-flops 910 & 920 (as the receive circuit) receiving the RECEIVE DATA clocked (sampled) into the flip-flops by the RECOVERED CLOCK (column 8 lines 46-54).

Regarding **claims 3 & 13**, in FIG.7, Kyles et al. teaches the adjustable delay circuit 800 outputting multiple clocks (CLOCK1, CLOCK2, and RECOVERED CLOCK); and the PHASE DETECT 500 comprising the flip-flops 910 & 920 (as the receive circuit) receiving the RECEIVE DATA clocked (sampled) into the flip-flops by the RECOVERED CLOCK (column 8 lines 46-60); and the gates 916 & 926 (the phase control circuit) outputs the FAST or SLOWER to indicate the lag or lead (column 8 line 65-column 9 line 2).

Regarding **claims 4-5 & 14-15**, Kyles et al. teaches the generated SLOW signal having two components/states being active or being not active (column 8 line 65-column 9 line 2) based on the RECOVERED CLOCK lagging or leading the RECEIVED DATA.

Regarding **claims 6 & 7**, in FIG.9A, Kyles et al. teaches the first control signal is an variable width pulse having a voltage/current level to indicate the phase difference (column 9 lines 3-10).

Regarding **claims 8 & 16**, in FIG.7, Kyles et al. teaches receiving the SELECT SIGNAL provided by the external device (the PATH SELECT 600).

Regarding **claims 9 & 17-18**, in FIG.6A & FIG.6B, Kyles et al. teaches the SELECT signal having a first and a second state based on the value stored in the flip-flop 620 which receives the ENABLE (command) to store the value, and in FIG.7 the MUX 516 (a circuitry) selecting the SLOWER signal or FASTER signal based on the states of the SELECT signal.

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Regarding **claim 10**, in FIG.7, Kyles et al. teaches the multiplexer (MUX 516 & MUX 518) in the select circuit (the MUX 516, the MUX 518 and the shift register 730).

Regarding **claims 35-36**, in FIG.7, Kyles et al. teaches a system comprising a signal line receiving the RECEIVE DATA and a device 700 (the receive device) of receiving clocking signal and the RECEIVE DATA to recover the clock and the data, the device comprises a phase detect 520 (as the control circuit) receiving a RECEIVE DATA (as an input signal) to generate a SLOWER (as the first control signal) based on the phase difference of the RECEIVE DATA and the RECOVERED CLOCK (column 6 lines 23-32); the MUX 516, the MUX 518 and the shift register 730 (as the select circuit, column 7 lines 47-55) receiving the SLOWER signal and a FASTER signal (as the second control signal) to select the SLOWER or the FAST controlled by the SELECT signal based on the condition at $\Delta t = T$ (having a first mode value, in FIG.4 where the negative/positive TUNE is based on faster or slower of the chosen clock (clock1 or clock2), column 6 lines 8-16) and to output the $TUNE_0 - TUNE_{N-1}$ signal to the continuously adjustable delay circuit 800 to adjust the phase of the clock (column 6 lines 44-50, wherein the circuit 300 in FIG.3 is the circuit 800 in FIG.7); and the PATH SELECT 600 (the control device) to provide the SELECT signal.

Regarding **claim 38**, in FIG.4, Kyles et al. teaches one mode value (positive tuning) at time interval T_0 to T_1 , after this interval a second mode value (negative tuning) at time interval T_1 to T_2 that the SELECT signal responsive to.

Regarding **claims 40-43**, the limitation recites that the different part of the receiver can be implemented in different arrangements. The implementing in different arrangements does not affect the subject matter of the inventions cited in the apparatus

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claim 35 wherein a signal line, a receive device, and a control device are included, hence the limitation is a design choice.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 52-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao et al. (US 6,725,408 B1) in view of Kyles et al. (US 6,008,680).

Regarding **claim 52**, in FIG.2, Cao et al. teaches a method and a device for implementing built-in self-test for multi-channel transceivers (column 1 lines 14-17, column 3 lines 14-20). The device comprises a Test Pattern Generator (TPG 22) to generate a pseudo-random test pattern (as the first test signal, column 3 lines 37-39); a MUX 14 (as the receive circuit) to receive the PN test pattern based on the CLK; a CDR 10 (the clock data recovery circuit); and a TRE 24 (Test Result Evaluator as the compare circuit, column 3 lines 45-51) comparing the test pattern and the received from the DEMUX 12, however does details the CDR.

In FIG.7, Kyles et al. teaches a CDR circuit, the circuit comprises a phase detect 520 (as the control circuit) receiving a RECEIVE DATA (as an input signal) to generate a SLOWER (as the first control signal) based on the phase difference of the RECEIVE DATA and the RECOVERED CLOCK (column 6 lines 23-32); the MUX 516, the MUX 518 and the shift register 730 (as the select circuit, column 7 lines 47-55) receiving the

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SLOWER signal and a FASTER signal (as the second control signal) to select the SLOWER or the FAST and to output the $TUNE_0 - TUNE_{N-1}$ signal to the continuously adjustable delay circuit 800 to adjust the phase of the clock (column 6 lines 44-50, wherein the circuit 300 in FIG.3 is the circuit 800 in FIG.7).

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to implement the Cao et al.'s CDR by Kyles et al.'s teaching to receive the output signal from the MUX 14 as the RECEIVE DATA to have a continuously adjustable delay circuit for the purpose of being able adjust the changes in the phase of a signal without losing received data (column 3 lines 52-59).

Regarding **claim 53**, in FIG.3, Cao et al. teaches the TPG is a linear feedback shift register to produce the PN test pattern (column 5 lines 34-38).

Regarding **claim 54**, in FIG.2, Cao et al. teaches the input selector 26 (as the transmit circuit as claimed) having the input 16 coupled to receive the test pattern switchably or the DATA (column 3 lines 22-27), and the output coupled to the MUX 14 switchably.

Regarding **claim 55**, in FIG.2, Cao et al. teaches the during the testing mode, the test pattern from the TPG fed to the MUX 14 (the receive circuit) via the input selector 26 being controlled by the mode (testing or operation, column 3 lines 22-27), hence the Cao et al.'s device provides a mode value/signal to the input selector 26 to select the test pattern or the data according to the mode value stored in a circuit of the device.

Regarding **claims 56-57**, in FIG.4, Cao et al. teaches a signal generator in TRE to generated the signal generated from TPG by using the same signature provided to signature analyzer 40 (column 5 lines 2-7)

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Regarding **claim 58**, in FIG.2, Cao et al. teaches the TPG 22 to provide the test pattern (the first test signal as the compare signal) to the TRE (column 4 lines 54-58).

Allowable Subject Matter

8. Claims 19-34 are allowed.
9. Claims 37 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. Claims 45 and 47-51 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
11. Claim 59 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.
12. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among Other things, at least a system of clock data recovery (CDR) circuits and its method as a whole, and the combination of elements and features, which includes a first CDR to recover clock and data signals from a first signal line and generate a first control signal, and a second CDR to recover clock and data signals from a second signal line and generate a second control signal wherein the first CDR adjust the phase of a first recovered clock in response to the first control signal, the second CDR comprising a select circuit to receive the first and second control signal to select one of the control

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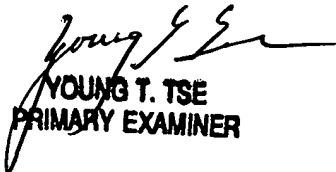
signals responsive a select signal and adjusting the phase of a second recovered clock signal in response to the selected control signal, or selecting the control signals from a phase control port receiving control signals from external of a CDR instead of a phase control circuit in the CDR.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
May 27, 2005


YOUNG T. TSE
PRIMARY EXAMINER